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TURFGRASS SCIENCE

at the University of Tennessee

Crabgrass Species Control in Turfgrass

Greg Breeden, *Weed Science Extension Assistant*
James T. Brosnan, *Assistant Professor, Turfgrass Weed Science*
Plant Sciences

Introduction

Crabgrass species (*Digitaria spp.*) are common annual grassy weeds that can be problematic on athletic fields, golf courses, residential and commercial lawns, and sod farms throughout Tennessee. Uncontrolled crabgrass will decrease the playability, usability and overall aesthetic quality of any turfgrass stand.

Crabgrass Characteristics

There are two primary crabgrass species in Tennessee – large crabgrass (*Digitaria sanguinalis*) (Figure 1) and smooth crabgrass (*Digitaria ischaemum*) (Figure 2). Large and smooth crabgrass can be

differentiated by examining the leaves and stems of each species. Large crabgrass has pubescence (hairs) on its leaves and stems, while the leaves and stems of smooth crabgrass have very little pubescence except on the collar region (the intersection of the leaf and stem of the plant). Smooth crabgrass is the most prevalent crabgrass species infesting turf in Tennessee. Both large and smooth crabgrass are summer annuals that germinate primarily in the spring, grow through the summer, produce seeds in the fall and die following the first killing frost.



Figure 1. Large crabgrass (*Digitaria sanguinalis*)



Figure 2. Smooth crabgrass (*Digitaria ischaemum*)

Crabgrass Germination and Preemergence Herbicides

Correct application timing is an integral part of controlling crabgrass with preemergence herbicides. A common misconception is that preemergence herbicides act by preventing weed seeds from germinating. These herbicides actually prevent germinating seedlings from developing into mature plants. For preemergence herbicides to work properly, they must be applied before seed germination and need approximately 0.5 inch of rainfall or overhead irrigation within 24 to 48 hours after application to be activated.

Large and smooth crabgrass seed germinates in the spring when soil temperatures exceed 55 degrees F for four consecutive days and nights. The blooming of the forsythia plant, also known as golden bells, (Figure 3) is a visual indicator that soil temperatures are increasing. Preemergence herbicides for crabgrass control should be applied before crabgrass seed begins to germinate; target applications for late February or early March in West Tennessee and mid-March to early April in East Tennessee. The first preemergence application of the season should be made before the last forsythia bloom falls from the tree.



photo courtesy of <http://tenn.bio.utk.edu/index.html>

Figure 3. Forsythia in bloom

Preemergence Crabgrass Control Options

The primary preemergence herbicides for crabgrass control are listed in Table 1. Since many granular and sprayable formulations of these herbicides exist, they are listed in terms of pounds (lb) of active ingredient (ai) per acre (a), or lb ai/a. Research conducted at the University of Tennessee has shown that these materials perform similarly when applied correctly under the same environmental conditions.

Generally, these herbicides will provide crabgrass control for 12-16 weeks after application depending on application rate. However, the level of control provided will dissipate over time. Using a split application strategy where each herbicide is applied twice at a lower rate can extend the length of residual control provided by a preemergence herbicide.

It is critical that preemergence herbicides are applied prior to the germination of crabgrass seed. If for some reason an herbicide cannot be applied prior to germination, certain products combining both pre- and postemergence materials can be used to provide crabgrass control. Research at the University of Tennessee has found that Echelon (sulfentrazone + prodiamine) and Dimension (dithiopyr) can provide postemergence control of newly emerged crabgrass seedlings, as well as preemergence control of those that have not yet germinated. Applications of a postemergence product like Tenacity (mesotrione), plus a preemergence product, like Barricade (prodiamine), can also provide a similar response.

Postemergence Crabgrass Control Options

Numerous postemergence herbicides are also available for crabgrass control (Table 1). When choosing a postemergence herbicide, make sure it is labeled for the turf and use area where it is to be applied. Unlike the preemergence options for crabgrass control, many of the postemergence options may only be labeled on one or two turf species. Postemergence herbicides can be applied anytime after crabgrass has germinated. Consider that these herbicides often provide better control when applied to small (less than two tillers), actively growing crabgrass plants. When applied to larger plants (three or more tillers) repeat applications will likely be necessary for complete control.

Table 1. Preemergence and postemergence herbicide options for selective control of crabgrass (Digitaria spp.)

Active Ingredient (Trade Name Ex.)	Formulations	Rate ai/a	Labeled Use Areas	Labeled Turfgrasses	Crabgrass Susceptibility**
Preemergence Herbicides					
benefin (Balan)	2.5G	2-3 lb	Lawns and golf courses	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Good
benefin + oryzalin (XL 2G)	2G	2-3 lb	Established turfgrass	Tall Fescue, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
benefin + trifluralin (Team 2G)	2G	1.5-3 lb	Lawns and golf courses	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
bensulide (Bensumec)	4LF	7.6-12.4 lb	Lawns and golf courses	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
dithiopyr (Dimension, Dimension Ultra)	1EC, 40WP, 2EW, others	0.38-0.5 lb	Golf courses (except putting greens), athletic fields, sod farms, residential and non-residential areas	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
oryzalin (Surflan)	4AS	1.5-2 lb	Turfgrass	Tall Fescue, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
oxadiazon (Ronstar)	2G, (50WSP Dormant Turf Only)	1-4 lb	Golf courses (except tees and putting greens), athletic fields, sod farms and non-residential areas [Not labeled for residential lawn use]	Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Bermudagrass, Zoysiagrass	Excellent
oxadiazon + prodiamine (Regalstar II)	1.2G	2.4 lb	Turf and golf courses (except putting greens)	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
pendimethalin (Pendulum Aquacap, others)	3.8L, others	1.5-3 lb	Golf courses (except tees and greens), athletic fields, sod farms, residential and non-residential areas	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
prodiamine (Barricade, others)	65WG, 4FL, others	0.38-1 lb	Golf courses, athletic fields, sod farms, residential and non-residential areas	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
prodiamine + sulfentrazone (Echelon)	4SC	0.25-1.125 lb	Golf courses (fairways and roughs), athletic fields, sod farms, residential and non-residential areas	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipede grass, Zoysiagrass	Excellent
siduron (Tupersan)	50WP	3-6 lb	Golf courses, athletic fields, sod farms, lawns and parks	Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Zoysiagrass	Good
Numerous combination products (not listed) combining multiple active ingredients can also provide good to excellent preemergence control of crabgrass.					
Postemergence Herbicides					
fenoxaprop (Acclaim Extra)	0.57EC	0.089 lb	Sod farms, commercial and residential turf	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Zoysiagrass	Good
fluzifop (Fusilade II)	2L	0.03-0.09 lb	Parks, sports fields, golf courses, commercial areas. Not for use in home lawns.	Tall Fescue, Zoysiagrass	Good
mesotrione (Tenacity)	FL	0.156-0.25 lb	Golf courses, sod farms	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Centipede grass	Good
MSMA	Product Dependent	2-3 lb	Golf courses, turfgrasses, grass seed crops	Kentucky Bluegrass*, Fine Fescue*, Tall Fescue*, Bermudagrass, Zoysiagrass	Good
MSMA + metribuzin (Sencor)	Product Dependent + 75DF	2-3 lb + 0.33-0.66 lb	Parks, sports fields, golf courses (fairways)	Bermudagrass*	Good
quinclorac (Drive XLR8)	1.5L	0.75 lb ae	Golf courses, athletic fields, sod farms, residential and non-residential areas	Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Bermudagrass, Zoysiagrass	Excellent
* Severe injury can occur					
** Key to control codes: Excellent (90 to 100%); Good (80 to 90%); Fair (70 to 80%); Poor (Less than 70%)					

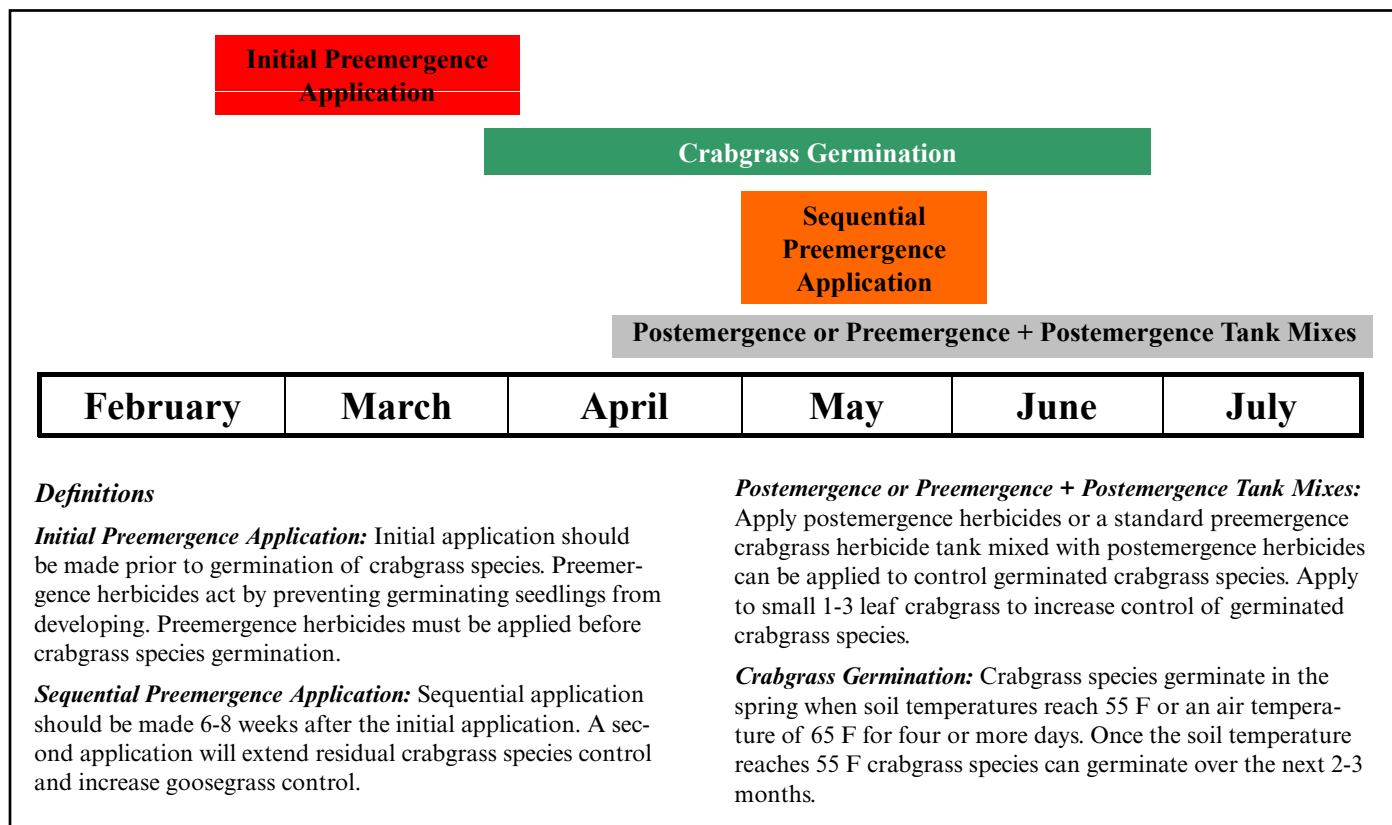


Figure 4. Time-line for crabgrass species control

Final Thoughts

Establishment of grassy weeds, like crabgrass, can often be prevented with a timely preemergence herbicide application in the spring. Most preemergence herbicides perform similarly when applied correctly under the same environmental conditions. Crabgrass plants escaping preemergence herbicide applications will need to be controlled with a postemergence herbicide. Sequential applications of these herbicides can often provide improved control.

Always refer to the product label for specific information on proper product use, tank-mix compatibility and turfgrass tolerance.

For more information on turfgrass weed control, visit the University of Tennessee's turfgrass weed science Web site, <http://tennesseeturfgrassweeds.org>

This replaces the original publication of the same name developed by Scott McElroy and Greg Breeden in 2007.

Disclaimer

This publication contains herbicide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the herbicide applicator's responsibility, by law, to read and follow all current label directions for the specific herbicide being used. The label always takes precedence over the recommendations found in this publication.

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